

DOCKET NO: 289246US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
MARKUS KLUMPE, ET AL. : EXAMINER: KEYS, ROSALYND ANN  
SERIAL NO: 10/575,760 :  
FILED: APRIL 13, 2006 : GROUP ART UNIT: 1621  
FOR: C10 ALKANOLALKOXYLATE :  
MIXTURES AND USE THEREOF AS  
NOVEL LOW-FOAMING WETTING  
AGENTS

APPEAL BRIEF

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from the Final Rejection dated March 23, 2010. A Notice of Appeal was timely filed with a pre-Appeal Brief Request for Review on July 22, 2010. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed on September 9, 2010. The Notice required the filing of an Appeal Brief by October 9, 2010.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is BASF Aktiengesellschaft, having an address of Ludwigshafen, Germany, 67056.

## II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF THE CLAIMS

Claims 1-2 and 5-10 stand twice rejected and the rejections are herein appealed.

Claims 3 and 4 are cancelled.

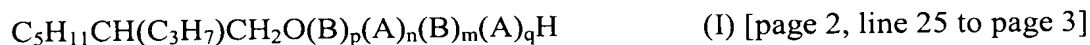
## IV. STATUS OF THE AMENDMENTS

No amendment under 37 CFR 1.116 has been filed.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

It is preliminarily noted that references in brackets are to page and line number of the specification as filed.

Independent Claim 1 provides an alkoxylate mixture comprising alkoxylates of the formula (I)



where

A is ethyleneoxy [page 2, line 32],

B propyleneoxy [page 3, line 4]

groups A and B being present in the form of blocks in the stated sequence [page 2, line 37] [page 9, lines 35-37],

p is a number from 1 to 3 [page 3, line 35],

n is a number from 0.25 to 10 [page 4, line 1],

m is a number from 2 to 10 [page 3, line 2],  
q is a number from 1 to 5 [page 4, line 6],  
from 85 to 96% by weight of alkoxylates A1, in which  $C_5H_{11}$  is n- $C_5H_{11}$ , and  
from 4 to 15% by weight of alkoxylates A2, in which  $C_5H_{11}$  is  $C_2H_5CH(CH_3)CH_2$   
and/or  $CH_3CH(CH_3)CH_2CH_2$  [page 5, lines 11-14],  
being present in the mixture.

Dependent Claims 5-10 stand or fall with Claim 1.

Dependent Claim 2 further recites that  $C_3H_7$  is n- $C_3H_7$  [page 5, line 16].

Claim 2 stands alone.

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

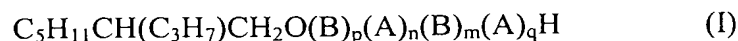
Claims 1-2 and 5-10 stand twice rejected under 35 U.S.C. § 103(a), as being unpatentable over Dahlgren et al. (WO 94/11331)('331) in view of Dahlgren et al. (WO 94/11330)('330) and further in view of Clement et al. (WO 01/04183 A1).

## VII. ARGUMENT

Rejection of Claims 1 and 5-10 under 35 U.S.C. § 103(a), over Dahlgren et al. (WO 94/11331)('331) in view of Dahlgren et al. (WO 94/11330)('330) and further in view of Clement et al. (WO 01/04183 A1)

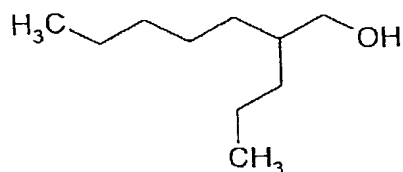
Claims 1 and 5-10

The claimed invention provides a an alkoxyate mixture comprising the alkoxyates of the formula (I)

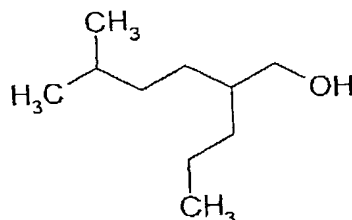
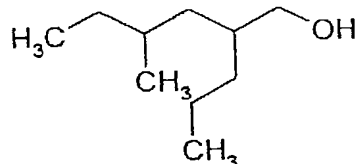


as described in Claim 1 of the present application. In the mixture, from 85 to 96% by weight is an alkoxyate A1, in which  $C_5H_{11}$  is n- $C_5H_{11}$ , and from 4 to 15% by weight is an alkoxyate A2, in which  $C_5H_{11}$  is  $C_2H_5CH(CH_3)CH_2-$  and/or  $CH_3CH(CH_3)CH_2CH_2-$ .

Accordingly, the claimed mixture contains an alkoxyates mixture of the following alcohol chemical structures:



A1

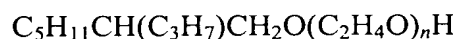


A2

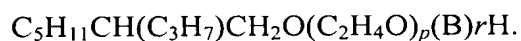
Appellants have provided specific examples of alkoxyates according to the claimed invention based on an isomer mixture comprising 87% of 2-propylheptan-1-ol, 11% of 2-propyl-4-methylhexan-1-ol and < 1% of 2-propyl-5-methylhexan-1-ol (page 13). Moreover, Appellants have described that the claimed isomer mixture must be specially prepared or combined (page 4, lines 27-30):

The novel alkoxyate mixtures are obtained by alkoxylation of the parent alcohols  $C_5H_{11}CH(C_3H_7)CH_2OH$ . **The starting alcohols can be mixed from the individual components so that the novel ratio results.** (Bold added for emphasis)

Dahlgren('331) is directed to a process for cleaning hard surfaces with a detergent comprising an alkoxylate selected from the group consisting of



and



This reference specifically describes 2-propylheptanol as the starting alcohol for alkoxylation (page 1, lines 24-29) and specifically describes 2-propyl heptanol as a Guebert alcohol (page 2, line 27), which Appellants submit is a misspelling of the term "Guerbet alcohol" and is a product obtained by the Guerbet reaction as described in the attached Wikipedia article.

Applicants submit that as described in the article, 2-propyl heptanol is obtained via the Guerbet reaction of **1-pentanol**, a straight chain alcohol. The mechanism of this reaction and resulting structures are shown in the equations on the top of page 2 of the Wikipedia article ( $\text{R} = \text{CH}_3\text{CH}_2\text{CH}_2-$ ). As shown by the mechanism, 2-propyl heptanol is the Guerbet reaction product of 1-pentanol and therefore cannot be the mixture according to the present invention.

The Examiner asserts that (Official Action dated March 23, 2010, page 3, third paragraph) that based on a dictionary definition of the term "amyl" it is well known that  $\text{C}_5\text{H}_{11}$  usually occurs or is formed as a mixture of isomers and that the  $\text{C}_5\text{H}_{11}$  portion of the compounds of Dahlgren '331 would likely be such a mixture of isomers, "unless Dahlgren et al. '330 perform certain steps or utilize certain conditions in order to avoid such isomeric mixtures." (Official Action dated March 23, 2010, page 3, lines 21-22)

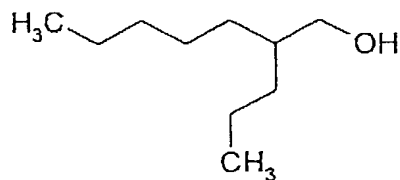
Appellants submit that this is erroneous and technically unsound logic in view of the description of the cited reference. Firstly, the definition cited from "TheFreeDictionary" provides a nomenclature definition of the five carbon radical unit and as taught in every basic organic chemistry course, the tetravalent character of the carbon atom allows multiple isomeric 5-carbon structures to fall under the "amyl" description. Such nomenclature

description would not be interpreted by one of ordinary skill in the art to describe that whenever a  $C_5H_{11}$ - unit is indicated in a chemical formula, a mixture of isomers is necessarily present. One of ordinary skill would look to description of the method of synthesis to ascertain the  $C_5H_{11}$ - structure if it is not fully described.

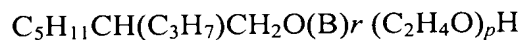
Appellants have further noted to the Examiner (Pre-Appeal Brief Request for Review filed July 22, 2010, page 3, third paragraph) that Dahlgren describes 2-propyl heptanol as a Guebert (Guerbet) alcohol and thereby notifies one of ordinary skill of the definite structure of the compound. Appellants submit that one of ordinary skill would recognize that the mechanism of the aldol condensation which occurs in the Guebert reaction involves the chemical structure of carbons 1 and 2 of the alcohol and no chemical reaction of the carbons beyond carbons 1 and 2 of the chain. Therefore, no rearrangement takes place with these carbons as would be necessary to obtain the isomeric mixture alleged by the Examiner.

Appellants submit that the technology clearly shows that Dahlgren does not describe or intend an isomeric mixture, let alone, the specific isomer mixture according to the invention. The Examiner has disregarded this technological fact and continues to use a non-relevant nomenclature definition to support a showing of obviousness.

Further, Appellants submit that at the very least, as one of ordinary skill in the art, Dahlgren is aware and knowledgeable of the significance of chain branching/chain length influence on chemical properties and by describing 2-propylheptanol as a Guerbet alcohol, Dahlgren defines a specific chemical structure having a **normal chain  $C_5H_{11}$**  structure as shown below.



Dahlgren(‘330) is also directed to an alkoxylate of the formula:



which is based on 2-propylheptanol, also described as a Guebert alcohol (page 2, line 16).

Clement is cited to show a double metal cyanide catalyst for alkoxidation. The tertiary reference does not disclose or suggest the alkoxylate mixture according to the claimed invention.

In asserting that it is well known that  $\text{C}_5\text{H}_{11}$  usually occurs or is formed as a mixture of isomers, the Examiner appears to be alleging that the isomer composition is inherent to the  $\text{C}_5\text{H}_{11}$  structure.

To establish inherency, the extrinsic evidence ‘must make clear that **the missing descriptive matter is necessarily present** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. **The mere fact that a certain thing may result from a given set of circumstances is not sufficient.**’ (*In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)(citations omitted)(Bold added for emphasis)

Appellants submit that by describing 2-propyl heptanol as a Guebert [Guerbet] alcohol, as described above, both Dahlgren references clearly indicate a straight chain structure and therefore, the isomeric mixture alleged by the Examiner cannot be inherent.

In reversing an obviousness rejection in *Ex parte* SUSUMU TANAKA and YASUO MURAKAMI (Appeal 2007-3845; Decided: March 28, 2008) the Board of Patent Appeals and Interferences stated:

In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)(Bold added for emphasis)

Appellants submit that the Office has not provided reasoning which is articulate or rationally underpinned in support of its conclusion. Appellants respectfully note that as described above, the Examiner's reasoning is not based on sound logic and is, in fact erroneous.

For all of the above reasons, Appellants submit that the rejection of Claims 1 and 5-10 under 35 U.S.C. § 103(a), over Dahlgren et al. (WO 94/11331)('331) in view of Dahlgren et al. (WO 94/11330)('330) and further in view of Clement et al. (WO 01/04183 A1) should be reversed.

#### Claim 2

Claim 2 depends from Claim 1 and further recites that  $C_3H_7$  is n- $C_3H_7$  thus further defining the structure of the three carbon chain attached to carbon 2 of formula (I) according to the invention. The specific isomer mixture recited in Claim 1 is not disclosed or suggested by the cited references as described above.

Accordingly, Appellants submit that the rejection of Claim 2 under 35 U.S.C. § 103(a), over Dahlgren et al. (WO 94/11331)('331) in view of Dahlgren et al. (WO 94/11330)('330) and further in view of Clement et al. (WO 01/04183 A1) should be reversed.

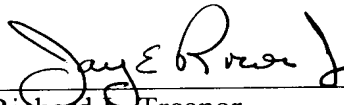


CONCLUSION

For the above reasons, Applicants respectfully requested that all outstanding rejections of the pending claims be reversed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



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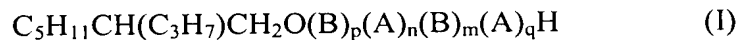
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VIII. CLAIMS APPENDIX.

Claim 1 (Rejected): An alkoxylate mixture comprising alkoxylates of the formula (I)



where

A is ethyleneoxy,

B propyleneoxy

groups A and B being present in the form of blocks in the stated sequence,

p is a number from 1 to 3,

n is a number from 0.25 to 10,

m is a number from 2 to 10,

q is a number from 1 to 5,

from 85 to 96% by weight of alkoxylates A1, in which  $\text{C}_5\text{H}_{11}$  is n- $\text{C}_5\text{H}_{11}$ , and

from 4 to 15% by weight of alkoxylates A2, in which  $\text{C}_5\text{H}_{11}$  is  $\text{C}_2\text{H}_5\text{CH}(\text{CH}_3)\text{CH}_2$

and/or  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2$ ,

being present in the mixture.

Claim 2 (Rejected): The alkoxylate mixture according to claim 1, wherein  $\text{C}_3\text{H}_7$  is n- $\text{C}_3\text{H}_7$ .

Claims 3-4 (Canceled).

Claim 5 (Rejected): A process for the preparation of an alkoxylate mixture according to claim 1 comprising reacting a 2-propyl heptanol mixture with ethylene oxide and propylene oxide under alkoxylation conditions.

Claim 6 (Rejected): The process for the preparation of an alkoxylate mixture according to claim 5, wherein the reacting a 2-propyl heptanol mixture with ethylene oxide and propylene oxide comprises a double metal cyanide compound as a catalyst.

Claim 7 (Rejected): An emulsifier, foam regulator and wetting agent for hard surfaces comprising the alkoxylate mixture according to Claim 1.

Claim 8 (Rejected): A method for preparing detergents, surfactant formulations for cleaning hard surfaces, humectants, cosmetic, pharmaceutical and crop protection formulations, finishes, coating materials, adhesives and leather degreasing agents, formulations for the textile industry comprising adding the alkoxylate mixture according to claim 1.

Claim 9 (Rejected): A detergent, cleaning agent, wetting agent, coating material, adhesive, leather degreasing agent, humectant or textile treatment composition, additive for mineral building materials or cosmetic, pharmaceutical or crop protection formulation comprising an alkoxylate mixture according to claim 1.

Claim 10 (Rejected): A processing method comprising one selected from the group consisting of emulsifying, foam regulating and wetting of hard surfaces employing the alkoxylate mixture according to claim 1, wherein the processing method is one selected from

the group consisting of fiber processing, metal processing, food processing, water treatment, paper processing, mineral processing, fermentation, emulsion polymerization and preparing mineral building materials.

IX. EVIDENCE APPENDIX

A. Article entitled “Guerbet reaction,” Wikipedia

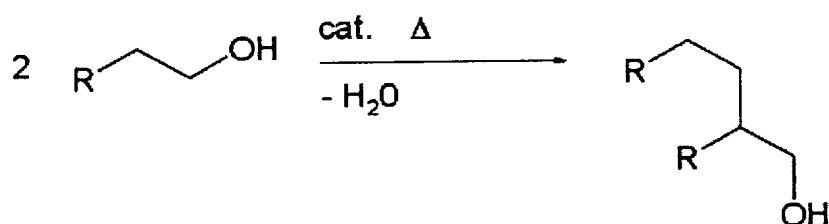
X. RELATED PROCEEDINGS APPENDIX

None

# Guerbet reaction

From Wikipedia, the free encyclopedia

The **Guerbet reaction**, named after Marcel Guerbet (1861-1938), is an organic reaction converting a primary aliphatic alcohol into its  $\beta$ -alkylated dimer alcohol with loss of one equivalent of water.<sup>[1]</sup> This reaction requires a catalyst and elevated temperatures.



The original 1899 publication concerned the conversion of *n*-butanol to *2-ethyl-1-hexanol*. The alcohols derived from this reaction are called **Guerbet alcohols**. Application of long-chained aliphatic alcohols gives access to surfactants.

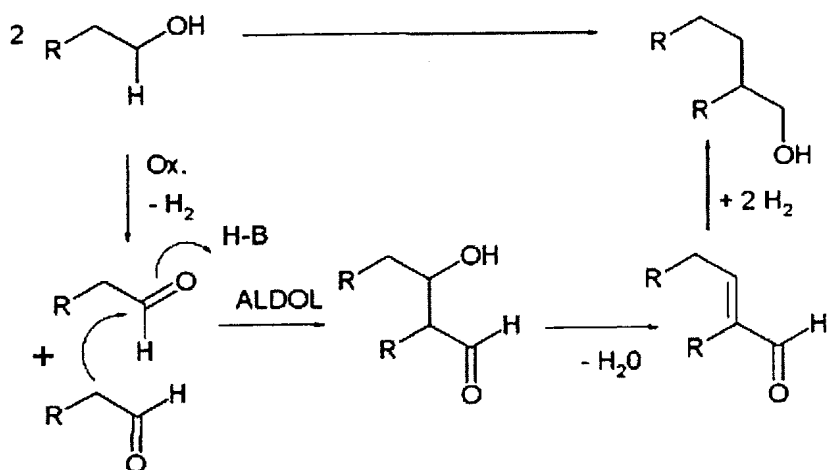
The reaction requires alkali metal hydroxides or alkoxides and hydrogenation catalysts such as Raney Nickel at higher temperature (220 °C) and pressure.

## Contents

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- 2 Scope
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## Reaction mechanism

The reaction mechanism for this reaction is a four-step sequence. In the first step the alcohol is oxidized to the aldehyde. These intermediates then react in an Aldol condensation to the vinyl aldehyde which the hydrogenation catalyst then reduces to the alcohol.<sup>[2]</sup>



The Cannizzaro reaction is a competing reaction when two aldehyde molecules react by disproportionation to form the corresponding alcohol and carboxylic acid. Another side reaction is the Tishchenko reaction.

## Scope

New catalyst systems are actively researched which can bring down the processing temperature. In one study 1-pentanol is reacted with an iridium dehydrogenation catalyst (Cp\* stands for the pentamethylcyclopentadiene ligand) and potassium tert-butoxide as a base in *p*-xylene.<sup>[3]</sup> A small amount of the diene *1,7-octadiene* is required as a proton acceptor.